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The Impact of Alexithymia on Desire for Alcohol during a Social Stress Test

## Abstract

**Background:** Alexithymia is a personality construct comprising difficulty in identifying and describing emotions and externally oriented thinking. Its role in heavy and problematic alcohol consumption is well documented, together with its relationship with social stress. However, little research has examined whether social stress has any effect on desire for alcohol among alexithymic individuals. **Objectives:** In this experimental study, we explored the relationship between alexithymia and desire for alcohol in response to an experimental social stressor. **Methods:** One hundred and thirty eight social drinkers completed the Toronto Alexithymia Scale, self-report measures of alcohol consumption and a stress-inducing task. Desire for alcohol was measured at three time points: baseline, stressor and recovery. **Results:** Correlation analysis demonstrated that alexithymia was associated with significantly higher rates of alcohol consumption and higher levels of desire for alcohol. Mixed measures ANOVA demonstrated a significant main effect of alexithymia and a significant group by time effect of alexithymia on desire for alcohol. **Conclusions/Importance:** The findings demonstrate increased desire for alcohol before, during and after a social stressor among alexithymic participants. These findings offer an insight into the relationship between alexithymia, social stress and alcohol consumption.

*Keywords:* alexithymia, social stress, desire for alcohol

Alexithymia was established as a personality construct in the early 1970s, typified by difficulty in identifying and describing emotions and externally oriented thinking (Sifneos, 1973). The prevalence rate is around 10% of the general population (Mattila, Salminen, Nummi & Joukamaa, 2006) with some European studies finding up to 23% (Gatta et al., 2014). As Alexithymia is characterised by the inability to express emotion, it is consequently associated with a range of somatic and psychiatric issues such as anxiety (Karukivi et al., 2010), depression (Honkalampi et al., 2000), substance abuse disorders (Ghalehban & Besharat, 2011) and problematic alcohol use (Thorberg et al., 2011). In addition to the conceptualisation of alexithymia as a vulnerability factor for illness (primary alexithymia), it has also been suggested that secondary alexithymia may arise as the consequence of illness or a stressful event (de Vente, Kamphuis & Emmerlkamp, 2006).

Alexithymia's role in heavy and problematic alcohol consumption is well documented, with incidence of alcohol disorders in alexithymic individuals reported as between 45 and 67% (Thorberg et al., 2009). Furthermore, alexithymic problem drinkers have been shown to consume double the amount of alcohol of non-alexithymic problem drinkers, which some researchers have suggested is due to a greater propensity to an avoidant coping approach to stress (Coriale et al., 2012). Although the majority of research into alexithymia and alcohol consumption has been carried out in clinical samples, recent research has described similar results for social drinking college students, with alexithymia positively correlated with heavier drinking (Lyvers, Lysychka & Thorberg, 2014). Bruce, Curren & Williams (2012) found that alexithymia predicted alcohol consumption in non-problem drinkers, and that this relationship was fully mediated by social and coping drinking motives, meaning that alexithymic individuals are motivated to drink in order to cope with negative affect and to fit in with others. Similarly, an earlier study by Stewart, Zvolensky & Eifert (2002) found that

alexithymic individuals drink alcohol in order to cope with anxious experiences. If stress therefore increases alcohol consumption in alexithymic individuals, it could be argued that these individuals self-medicate with alcohol as a way of coping with stress and anxiety.

Due to the propensity for heightened stress arousal in alexithymic individuals and poor stress management (De Timary, Luts, Hers & Luminet (2008), and the potential for secondary alexithymia to arise as a result of stressful events the stress-alexithymia hypothesis is well recognised (Martin & Pihl, 1985). Alexithymic individuals have been shown to demonstrate greater cortisol arousal during and after a social stress test (Hua et al., 2014), and particularly during the anticipation of a stressor (De Timary, Roy & Luminet, 2008). One way in which alexithymic individuals may respond to this increased social stress is to crave an alcoholic drink. Recently, research has examined the relationship between alexithymia and alcohol craving. Thorberg et al. (2011) found that alcohol-dependent individuals with alexithymia had significantly higher levels of obsessive thoughts about alcohol and compulsive drinking urges compared to a non-alexithymic group. Similarly, Luminet, de Sousa Uva, Fantini & de Timary (2016) found that in female alcohol-dependent patients the link between depression and craving was strengthened for those who scored higher on the difficulties describing feelings component of alexithymia. However, to-date no study has examined the link between alexithymia and alcohol craving in response to stress in a non-alcohol dependent sample.

The present study aimed to focus on a facet of alcohol craving by examining the relationship between alexithymia and desire for alcohol in social drinkers in relation to an acute social stressor. Specifically, the current study examined if alexithymia was associated with higher desire for alcohol in response to an acute social stressor.

## **Method**

### **Participants**

The study comprised 138 participants (60 males), recruited via poster, flyer and email campaigns at a Scottish University (there was no incentive for taking part). Participants included both staff and students. The mean age of the participants was 31.8 years (SD=10.71, Range 18–63). They were given a brief introduction of what the study would require and invited to participate. All participants were social drinkers. Identifying as a non-drinker was used as the only exclusion criteria for taking part in the study. Ethical approval was obtained from the University Ethics Committee before testing.

### **Measures**

Socio-demographic variables including age and gender were collected. In addition, all participants completed the following measures via a paper-based questionnaire:

#### **Alexithymia**

The Toronto Alexithymia Scale (TAS-20; Bagby, Taylor & Parker, 1994), a self-rating measure of Alexithymia was completed by respondents who rated their level of agreement to 20 statements on a 5-point Likert-type scale ranging from ‘strongly disagree’ (1) to ‘strongly agree’ (5) (e.g. “I am often confused about what emotion I am feeling”). Alexithymia status is based on the following scoring:  $\leq 51$  = non-alexithymia; 52-60 = possible alexithymia;  $\geq 61$  = alexithymia. The scale comprises three subscales; difficulty describing feelings (DDF), difficulty identifying feelings (DIF) and externally oriented thinking (EOT). The current study reported good internal consistency with Cronbach’s  $\alpha = .88$ .

#### **The Alcohol Timeline Followback**

An alcohol consumption timeline followback form (TLFB, based on Sobell & Sobell, 1992) was constructed to record daily alcohol consumption in the previous week. Through the TLFB, participants recorded the number, size and type/brand of drinks consumed on each of the days of the previous week. The total number of UK units consumed in the previous week was then calculated. A UK alcohol unit contains 8 g of ethyl alcohol.

### **Severity of Alcohol Dependence**

The Severity of Alcohol Dependence Questionnaire – Community Sample (SADQ-C; Stockwell, Sitharan, McGrath & Lang, 1994) is a 20 question self-report survey which measures the severity of alcohol dependence and impaired control over alcohol consumption. In this study, good internal consistency was demonstrated with Cronbach's  $\alpha = .90$ .

### **Desire for Alcohol**

Self-reported desire for alcohol was measured with a single item which asked “On a Scale of 1-100 how much do you want an alcoholic drink right now?”. This measure was completed at three time points: baseline, stressor and recovery and respondents answered with a number. The brevity of this instrument made it well suited for repeated assessments within the same experiment. The single-item approach to measuring craving has been well established (e.g., Drobes & Thomas, 1999). For example, a single item measure of craving was found to be just as effective as a longer, multi-item scale at predicting treatment outcome in a group of mild to moderate alcohol users (Fedoroff, Sobell, Agrawal, Sobell & Gavin, 1999).

### **Social Stressor**

A self-disclosing, public speaking social stress test was conducted, whereby participants were asked to prepare and present a three minute speech on the topic “What I like and dislike about my body” (Lewis & Vogeltanz-Holm, 2002). They were told they would have three minutes

to prepare the speech and that it would be recorded with a video camera. Some topic sentences were provided to ensure the speech lasted for the full three minutes. Instructions were given in line with previous research as follows: “The next part of the experiment is designed to assess your social skills and public speaking ability. You will be asked to produce a three minute speech on a controversial topic in front of the Researcher. Try to be as open and honest as possible. The speech will be videotaped. The topic of the speech is: What I like and dislike about my body and physical appearance. You now have 3 minutes to prepare your speech and the following questions should be answered: how important are your looks to you; how would you describe your body; what is your best feature and why; what do you dislike most about your body; what part of your body would you change the most and why. You will be informed when there are two minutes and one minute of preparation time remaining. Then you will face the Researcher and begin your speech”.

## **Procedure**

Participants were tested on a one-to-one basis with the researcher. At baseline, they completed the TAS-20, measures of alcohol consumption and a baseline measure of current desire for alcohol. The stress test instructions were then read to participants, who subsequently prepared their speech for three minutes. The researcher timed them and informed them of how much time was left every 60 seconds. Just before the participants delivered the speech they were asked their current desire for alcohol (there was approximately 5 minutes between the end of the baseline phase and the start of the social stressor), which they wrote down and the three minute speech was then delivered and recorded. Following conclusion of the speech participants read for ten minutes (post-stressor recovery phase) and desire for alcohol was measured for the final time at the end of this period. At debrief, participants were told the recording of the speech would be deleted.



## **Statistical Analysis**

Correlations, means and standard deviations were computed for all variables in order to examine the associations between alexithymia, its subcomponents, alcohol consumption and desire. Next, a Mixed measures ANOVA was performed in order to examine the change in desire for alcohol across the three time points (baseline, stressor, recovery), by group (alexithymic, possible alexithymic and non-alexithymic).

## **Results**

### **Intercorrelations**

Correlations were conducted in order to examine the relationships between alexithymia (including the three sub components), alcohol consumption and desire for alcohol across the three time points (baseline, anticipation of stressor, recovery). As shown in Table 1, higher levels of alexithymia were associated with higher rates of self-reported alcohol consumption measured by both severity of dependence and weekly units. In addition, DDF and DIF were also associated with higher levels of consumption as assessed by dependence and weekly units. Finally, EOT was found to be associated with higher levels of alcohol dependence, but not with total weekly units. Total alexithymia score, DIF and DDF were also significantly correlated with higher levels of desire for alcohol at all three time-points (baseline, stressor and recovery), and EOT was associated with desire at the stressor and recovery phases (see Table 1).

Insert Table 1 here

### **Group Comparisons**

Based on the established TAS-20 classification criteria, 17.1% of the sample were categorised as alexithymic individuals and 21% as possible alexithymic. Mixed measures ANOVA revealed a significant effect of time on desire for alcohol ( $F(1.54, 207.54) = 55.42, p < .001$ ), and a significant group effect of alexithymia on desire for alcohol ( $F(2, 135) = 15.65, p < .001$ ) indicating that individuals who were higher on alexithymia reported significantly higher levels of desire for alcohol compared to those lower on alexithymia. In addition, there was a significant time x alexithymia interaction effect ( $F(3.08, 207.54) = 7.3, p < .001$ ) (see Figure 1). Bonferroni corrected post-hoc tests showed a significant difference between non-alexithymic participants and alexithymic participants in their desire for alcohol at baseline ( $p < .05$ ), stressor ( $p < .001$ ) and recovery ( $p < .001$ ), and a similar pattern was found when comparing the alexithymic participants and those in the possible alexithymia group, with significant differences between these groups being observed at all three time points: baseline ( $p < .05$ ), stressor ( $p < .01$ ), and recovery ( $p < .001$ ). These results demonstrate that the alexithymic individuals had higher levels of desire for alcohol at all stages of the stressor in comparison to possible alexithymic individuals and non-alexithymic individuals. In particular, Alexithymic participants showed a larger increase in their desire for alcohol between baseline and stressor than the non-alexithymic participants, and this desire for alcohol remained more highly elevated for alexithymic participants during the recovery phase. The largest mean differences was observed between baseline and stressor, where desire for alcohol increased by 29.83 for alexithymic individuals, compared to 7.19 for the non-alexithymic group, and 19.07 for the possible alexithymic group (see Table 2). The effect size (Cohen's  $d$ ) for the difference between alexithymic participants and non-alexithymic participants in their desire for alcohol at stressor was  $d = 1.16$  indicating a large effect size. No significant differences were observed between non-alexithymic individuals and possible alexithymic individuals at baseline, stressor, or recovery. In order to investigate if these findings were confounded by gender differences the

analyses were repeated using only the male participants. Doing so revealed the same pattern of results for the males as was observed in the sample as a whole.

Insert Figure 1 here

Insert Table 2 here

## **Discussion**

The current study sought to examine the relationship between alexithymia and desire for alcohol among social drinkers in relation to an acute social stressor. The results show that when faced with a social stressor, alexithymic individuals demonstrate a significantly higher desire to consume alcohol than their non alexithymic counterparts. In addition, all three of the alexithymia sub-components were associated with desire for alcohol. This finding suggests that alcohol may be seen as a means of eliminating the uncomfortable state of stress being experienced by alexithymic individuals while undertaking a socially stressful activity.

Anticipation of a stressful experience has been shown to significantly increase physiological stress in alexithymic participants compared to non-alexithymic participants (de Timary et al., 2008). The results of the current study adds to this body of research by revealing that exposure to a socially stressful situation also significantly increases desire to drink alcohol in alexithymic individuals. Desire to consume alcohol can be seen as a facet of craving and previous research from Thorberg et al. (2009) has also identified that alexithymia is associated with higher levels of alcohol craving among alcohol dependent participants.

The use of alcohol by alexithymic individuals as a means to cope with stress has been identified in previous studies. For example, Bruce, Curren & Williams (2012) found that the relationship between alexithymia and alcohol consumption was mediated by drinking motives

with alexithymic participants being found to drink in order to cope with their emotions. The present findings add to this by suggesting that alexithymic individuals are more likely to desire alcohol in response to social stress than non-alexithymic individuals. Alexithymic individuals may not have the emotional capacity to identify and react to the discomfort felt in relation to a stressful situation which may therefore lead to poor behaviour choices such as heavy alcohol consumption (employed as an avoidant coping mechanism), in order to counteract the uneasy feeling caused by the stressor.

Those with higher alexithymia scores experienced a significantly greater increase in alcohol craving between baseline and stressor, and less of a reduction in craving between the stressor and recovery phase. This suggests that the craving for alcohol in alexithymic participants lasts longer after a stressful experience than for non-alexithymic participants, and could be related to an ongoing heightened feeling of stress after the event (Hua et al., 2014). This could go some way to explaining the tendency for greater consumption of alcohol in this personality type, given that they experience a heightened level of craving for a longer period of time after a stressful experience than that experienced by non-alexithymic individuals.

There are some limitations to the current study which should be considered. Almost all of the alexithymic participants identified in the sample were male meaning that it was not possible for us to consider gender differences in the current study. However, we did find the same pattern of results when analysing the males separately as was found in the whole sample. The study is also limited in using only a self-report measure (the TAS-20) to measure alexithymia, rather than combining this with an observer scale or interview. In addition, while increased desire for alcohol was demonstrated in relation to the stressful experience, it is not known whether this precipitates actual consumption of alcohol. As the current study utilised

an artificial lab-based stressor future research is required in order to examine if alexithymia is associated with increased desire for alcohol in response to real life stress. Finally, as research has suggested that alexithymia may be state-dependent it would be useful for future research to measure both changes in stress and alexithymia during and after the lab stressor in order to identify if alexithymia scores increase during the social stressor test.

## **Conclusions**

Previous research has shown that alexithymia is associated with heightened stress and problematic alcohol consumption. The current study examined whether an increase in desire for alcohol would occur among alexithymic individuals when faced with a socially stressful task. It was found that alexithymic participants experienced a significantly higher desire for alcohol in response to a socially stressful event compared to non-alexithymic participants. In addition, the decrease in desire for alcohol post-stressor was significantly lower for alexithymic individuals, suggesting that thoughts relating to stress, and the expectancy that alcohol may decrease the stress, may still have been evident for alexithymic participants even when the stressful event is no longer a threat. Given that alexithymic individuals are prone to higher perceived and biological stress, and problematic alcohol consumption, these findings may offer some explanation for the relationship between alexithymia, stress and alcohol use.

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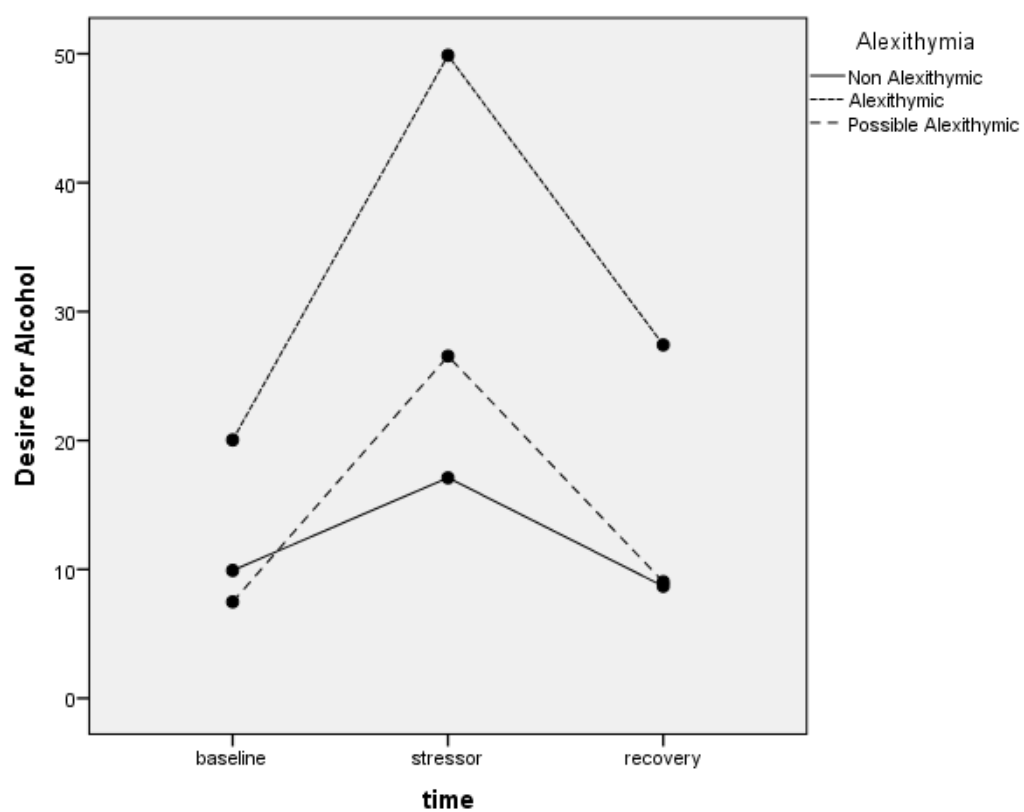
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**Table 1. Correlations, means and standard deviations of all variables**

	1	2	3	4	5	6	7	8	9
1. Alexithymia (total score)	--	.904**	.860**	.760**	.205*	.389**	.217*	.407**	.385**
2. DDF		--	.785**	.532**	.228**	.379**	.230*	.377**	.349**
3. DIF			--	.374**	.233**	.369**	.256**	.425**	.381**
4. EOT				--	.062	.237**	.064	.222**	.241**
5. Weekly units					--	.435**	.298**	.307**	.366**
6. Alcohol dependence						--	.391**	.448**	.426**
7. Desire for alcohol (baseline)							--	.516**	.705**
8. Desire for alcohol (stressor)								--	.595**
9. Desire for alcohol (recovery)									--
Mean	47.49	12.37	15.01	20.11	21.2	9.29	11.17	24.79	12.02
SD	13.31	4.51	5.84	5.54	15.85	8.98	16.26	27.84	17.47

Note. \*  $p < .05$ , \*\*  $p < .01$



**Figure 1. Change in desire for alcohol across time by alexithymia classification**

**Table 2. Means and standard deviations for desire for alcohol by alexithymia classification**

	Alexithymic	Possible Alexithymic	Non-Alexithymic
Baseline	20.04 (23.58)	7.48 (10.85)	9.92 (14.53)
Stressor	49.88 (32.82)	26.55 (25.8)	17.11 (22.5)
Recovery	27.42 (23.72)	9.03 (9.85)	8.69 (15.14)